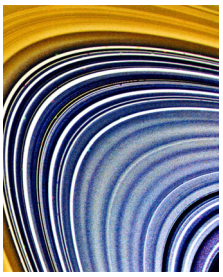
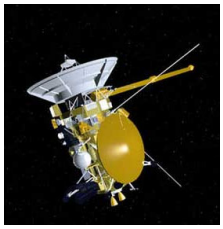
Introducing Reading, Writing & Rings!





Overview, or What's It All About?

The lessons in Reading, Writing & Rings serve as a roadmap of student learning. Each lesson contains age-appropriate learning goals for language arts and science. The lessons were designed for two student groups, those in grades 1–2 and those in grades 3–4. For detailed information on how the lessons were developed, the importance of blending language arts and science in a single lesson package, and teaching strategies, please consult the introductory text for either the grades 1–2 or grades 3–4 text.

What Is the Cassini–Huygens Mission?

Complete details on the Cassini–Huygens Mission are available on the mission website at — http://saturn.jpl.nasa.gov

Cassini–Huygens Highlights

Launch date — October 15, 1997
Saturn arrival date — July 1, 2004
Huygens probe release date — December 24, 2004
Huygens probe mission date — January 14, 2005

Cassini made close passes with Venus (twice), Earth, and Jupiter en route to Saturn. These close flybys boosted the spacecraft's speed, allowing engineers to minimize fuel on the long journey to Saturn.

Spacecraft Specifications

The Cassini orbiter is named in honor of the Italian–French Astronomer Giovanni Dominico (Jean-Dominique) Cassini, who made detailed observations of Saturn in the 1600s.

Spacecraft height — 6.7 meters (22 feet)
Weight at launch — 2,650 kg (5,842 pounds)
Number of instruments on the spacecraft — 12

The Huygens probe is named in honor of the Dutch Astronomer Christiaan Huygens, who studied Saturn in depth in the 1600s and discovered Saturn's largest moon, Titan.

Number of instruments on the probe — 6

Saturn Tour

Cassini's tour at Saturn is a four-year effort to study the planet, rings, moons, and magnetosphere. Orbits are designed to maximize science collection and take advantage of different geometries (i.e., viewing angles).

Number of Saturn closest approaches (periapses) — 74
Number of Titan flybys — 45

The Cassini–Huygens mission is a cooperative project of NASA, the European Space Agency, and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the Cassini–Huygens mission for NASA's Science Mission Directorate, Washington, D.C. The Cassini orbiter and its two onboard cameras were designed, developed, and assembled at JPL. The radar instrument team is based at JPL, working with team members from the United States and several European countries.

Basic Astronomy

The Cassini–Huygens website contains a wealth of facts and information designed especially for students. Visit the "Fun Facts" section of the "For Kids" section at — http://saturn.jpl.nasa.gov/kids/fun-facts.cfm

Find out about Saturn's size, distance from the Sun, its family of moons, and Earth's relationship to Saturn.

Pathways Through the Curriculum

As many of the lessons build upon one another, the recommendation is to use the entire 10-lesson set. However given time constraints, instructional focus, and student needs, you may want to select one of these abbreviated "pathways."

While all of the lessons integrate language arts and science and/or reading, writing, and science, some lessons have a stronger focus on one of these three disciplines.

Grades 1–2

Literacy Pathway — If your focus is primarily on language arts, lessons 1, 2, 3, 6, 9, and 10 provide the strongest reading and writing elements.

Scientific Inquiry Pathway — If your focus is blending science and language arts, lessons 1, 2, 3, 4, 5, 7, and 9 provide the richest experience.

Really pressed for time? Lessons 2, 7, and 9 provide a snapshot of the Reading, Writing & Rings experience.

Grades 3–4

Literacy Pathway — If your focus is primarily on language arts, lessons 3, 5, 8, 11, and 12 provide the strongest reading and writing elements.

Scientific Inquiry Pathway — If your focus is blending science and language arts, lessons 1, 2, 4, 5, 6, 7, 9, 10 provide the richest experience.

Really pressed for time? Lessons 3, 4, or 5 provide a snapshot of the Reading, Writing & Rings experience. In addition, lessons 6 and 7 make a nice pair, as do lessons 8 and 9.

Create, Participate!

We also invite you to create your own pathways! For example, 3rd and 4th grade students with minimal background in astronomy will benefit from the lessons in the 1–2 unit.

And, you are invited to share student work, lesson ideas, and modifications, and provide other feedback, through our Web portal — http://saturn.jpl.nasa.gov/education/edu-k4.cfm